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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,782	11/21/2003	Keith A. Couch	108348	2871

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EXAMINER	
HOPKINS, ROBERT A	

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/719,782	COUCH ET AL.	
	Examiner	Art Unit	
	Robert A. Hopkins	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 and 12-19 is/are rejected.

7)☒ Claim(s) 11 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11-21-03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 has a preamble which recites "The vessel of claim 6", however the body of the claim defines a power recovery device and clean gas outlets which are in communication with or bypass the power recovery device. Examiner respectfully submits that the power recovery device is not part of the "vessel" and therefore limitations to the power recovery device fail to further limit the "vessel of claim 6". Examiner notes that the combination of a vessel and power recovery device would require the preamble "a system" as recited in claim 13. Correction is requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18 and 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Blotenberg(5960624).

Blotenberg teaches a process for separating particulate solids from a contaminated gas stream and recovering power from the contaminated gas stream

comprising delivering the contaminated gas stream to a separator vessel, separating particulate solids from the contaminated gas stream in the separator vessel(31), withdrawing solids from the separator vessel, transporting a first stream(A3 and flue gas line B4) from the separator vessel to a power recovery unit(7), recovering mechanical power from the first clean gas stream in the power recovery unit, withdrawing the first clean gas stream from the power recovery unit, and intermittently mixing a second clean gas stream(A3 and bypass lines D6 and C5) from the separator vessel with the first clean gas stream withdrawn from the power recovery unit. Blotenberg further teaches wherein the contaminated gas stream is obtained from a catalyst regeneration vessel(2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blotenberg(5960624).

Blotenberg teaches a system for separating particulate solids from a contaminated gas stream, the system comprising a separator vessel(31) having a main contaminated gas inlet, a solids outlet, and a main clean gas outlet, and a power recovery unit(7) having a unit inlet and a unit outlet, the unit inlet being in downstream

communication with the main clean gas outlet and the unit outlet being in downstream communication with a branched portion of the main clean gas outlet. Blotenberg is silent as to a first main clean gas outlet and a second main clean gas outlet. It would have been obvious to someone of ordinary skill in the art at the time of the invention to substitute a first main clean gas outlet of the separator(31) connected to the unit inlet and a second main clean gas outlet of the separator(31) connected to the unit outlet for the branched clean gas outlet of Blotenberg to provide for an equivalent distribution of clean gas throughout the system but without use of excessive valving structures.

Blotenberg further teaches wherein the main contaminated gas inlet is in communication with a catalyst regeneration vessel(2). Blotenberg further teaches wherein the catalyst regeneration vessel has two cyclones in series(not shown) in communication with the main contaminated gas inlet. Blotenberg further teaches a bypass conduit(D6 and C5) communicates the main clean gas outlet with the unit outlet and the bypass conduit has an inner wall with a refractory lining.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blotenberg(5960624) taken together with Wilson(4279624).

Blotenberg teaches all of the limitations of claim 5 but is silent as to wherein the solids outlet and the main clean gas outlet extend through the same nozzle of the separator vessel. Wilson teaches a third stage separator for a catalytic cracking process, the separator including a solids outlet(50) and a clean gas outlet(36) extend through the same nozzle of the separator vessel(figure 3). It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide the solids

outlet and the main clean gas outlet extend through the same nozzle of the separator vessel of Blotenberg in order to decrease the overall size and number of parts of the separator.

Claims 6-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson(4279624) taken together with Dygert et al(2941621).

Wilson teaches a vessel for separating solids from a contaminated gas stream , the vessel(28) comprising a main contaminated gas inlet(34) to the vessel, a plurality of cyclones(2), each cyclone including a cyclone contaminated gas inlet in communication with the main contaminated gas inlet(see figure 1), a cyclone gas clean outlet(see figure 1), and a cyclone solids outlet(24 in figure 1), a tube sheet(10) within the vessel surrounding at least some of the plurality of cyclones, a main solids outlet(50) extending from the vessel, the main solids outlet being in communication with the cyclone solids outlet, and a main clean gas outlet(36,58) defined by the vessel, the main clean gas outlet defined by the vessel below the tube sheet. Wilson is silent as to at least two main clean gas outlets defined by the vessel. Dygert et al teaches a vessel for separating solids from a contaminated gas stream , the vessel(5) comprising a main contaminated gas inlet(13) to the vessel, a plurality of cyclones(21), each cyclone including a cyclone contaminated gas inlet in communication with the main contaminated gas inlet(see figure 3), a cyclone gas clean outlet(23 in figure 3), and a cyclone solids outlet(29 in figure 3), a tube sheet(8) within the vessel surrounding at least some of the plurality of cyclones, a main solids outlet extending from the vessel, the main solids outlet being in communication with the cyclone solids outlet, and at least

two main clean gas outlets(18 in figure 2) defined by the vessel. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide at least two main clean gas outlets on the vessel of Wilson in order to provide for more efficient release of the clean gas from the vessel of Wilson.

Wilson further teaches an additional tube sheet(12). Wilson further teaches wherein the cyclones comprise a body having a closed bottom end and a top end, the body defining the cyclone contaminated gas inlet at the top end, the feed gas inlet extending above the tube sheet, the cyclone body further defining a sidewall(6) with discharge openings(24) located between the tube sheet and the additional tube sheet for discharging particulate solids and a minor amount of an underflow gas stream. Wilson further teaches a swirl vane(15) to induce centripetal acceleration of the contaminated gas stream. Wilson further teaches a cyclone gas outlet tube defining a clean gas inlet end located within the cyclone body for receiving a clean gas stream and further defining a cyclone clean gas outlet extending through the closed bottom of the cyclone body and the additional tube sheet(see figure 1). Wilson further teaches wherein the solids outlet and the main clean gas outlet are located in the same nozzle of the separator vessel.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blotenberg(5960624) taken together with Wilson(4279624).

Blotenberg teaches a system for separating particulate solids from a contaminated gas stream, the system comprising a separation vessel(31) including a main contaminated gas inlet, a single cyclone, a cyclone solids outlet, and a main clean

gas outlet, a power recovery device(7) in communication with the main clean gas outlet, and a bypass conduit(D6 and C5) in communication with the main clean gas outlet that bypasses the power recovery device. Blotenberg is silent as to the vessel including a plurality of cyclones, a tube sheet, and a main solids outlet in communication with the cyclone solids outlet. Wilson teaches a vessel for separating solids from a contaminated gas stream , the vessel(28) comprising a main contaminated gas inlet(34) to the vessel, a plurality of cyclones(2), each cyclone including a cyclone contaminated gas inlet in communication with the main contaminated gas inlet(see figure 1), a cyclone gas clean outlet(see figure 1), and a cyclone solids outlet(24 in figure 1), a tube sheet(10) within the vessel surrounding at least some of the plurality of cyclones, a main solids outlet(50) extending from the vessel, the main solids outlet being in communication with the cyclone solids outlet, and a main clean gas outlet(36,58) defined by the vessel, the main clean gas outlet defined by the vessel below the tube sheet. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a plurality of cyclones for the single cyclone of Blotenberg in order to increase the separation efficiency of the vessel of Blotenberg.

Blotenberg is also silent as to a first main clean gas outlet and a second main clean gas outlet. It would have been obvious to someone of ordinary skill in the art at the time of the invention to substitute a first main clean gas outlet of the separator(31) connected to the unit inlet and a second main clean gas outlet of the separator(31) connected to the unit outlet for the branched clean gas outlet of Blotenberg to provide

for an equivalent distribution of clean gas throughout the system but without use of excessive valving structures.

Blotenberg further teaches wherein the bypass conduit includes a refractory lining on an inner wall thereof. Blotenberg further teaches wherein an outlet conduit from the power recovery device is in communication with the bypass conduit(see figure 1). Blotenberg further teaches wherein the main contaminated gas inlet is in communication with a flue gas outlet of a catalyst regeneration vessel. Blotenberg further teaches wherein the catalyst regeneration vessel has two cyclones in series(not shown) in communication with the main contaminated gas inlet.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Japanese reference(8-159415) and Nassir(4257788) teach a vessel having a plurality of cyclones , and having a clean gas outlet from the vessel in communication with a power recovery device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Friday, 7am-4pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rah
May 6, 2005

ROBERT A. HOPKINS
PRIMARY EXAMINER
A.U. 1724